UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,430	08/22/2001	Mary Faris	511582005000	9082

36327 7590 04/01/2004

AGENSYS C/O MORRISON & FOERSTER LLP
3811 VALLEY CENTRE DRIVE, SUITE 500
SAN DIEGO, CA 92130

EXAMINER	
HARRIS, ALANA M	
ART UNIT	**PAPER NUMBER**
1642	

DATE MAILED: 04/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/935,430	FARIS ET AL.	
	Examiner	Art Unit	
	Alana M. Harris, Ph.D.	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-67* is/are pending in the application.

4a) Of the above claim(s) *1-18,20 and 25-66* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19,21-24 and 67* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group XIII (claims 19, 21-24 and 67) in the Paper received August 12, 2003 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP 818.03(a)).

2. Claims 1-40 are pending.

Claims 19, 21 and 67 have been amended.

Claims 1-18, 20 and 25-66, drawn to non-elected inventions are withdrawn from examination.

Claims 19, 21-24 and 67 are examined on the merits.

Specification

3. The disclosure is objected to because of the following informality: it contains ATCC designations with no corresponding numbers, see page 15, section c. The essential information such be listed. Applicant is requested to review the entire application for such informalities and correction is required.

4. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code on pages 8, 21, 44, 93 and 110 for example. Applicant is required to review the entire application and delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 19, 21-24 and 67are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 19, 21, 22 and 23 are broadly drawn to methods of generating and inducing a mammalian immune response directed to 158P1D7 providing a 158P1D7-related protein. The specification has defined 125P5C8-related proteins, as well as what is considered to be the wild-type counterpart, 158P1D7, see page 14. The definition provided encompasses allelic variants, conservative substitution variants, analogs, homologs and fusion proteins that combine parts of different 158P1D7 proteins or fragments thereof. The written description in this instant case only sets forth the 158P1D7 nucleic acid and polypeptide designated as SEQ ID NO: 656 and 657, respectively. The written description is not commensurate in scope with the claims that embody 158P1D7 and 158P1D7-related polypeptides.

Vas-Cath Inc. V. Mahurkar, 19 USPQ2d 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the "written description" inquiry, *whatever is now claimed*. (See page 1117). The

specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116).

Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. 112 is severable from its enablement provision (see page 115).

With the exception of nucleic acid, SEQ ID NO: 656 and the encoded polypeptide SEQ ID NO:657, the skilled artisan cannot envision the nucleic acid and the detailed structure of the encompassed polypeptides and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and a reference to a potential method of isolating it. The polypeptide itself is required. See *Fiers v. Revel*, 25 USPQ 2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. V. Chugai Pharmaceutical Co. Lts.*, 18 USPQ2d 1016.

Furthermore, In *The Reagents of the University of California v. Eli Lilly* (43 USPQ2d 1398-1412), the court held that a generic statement which defines a genus of nucleic acids by only their functional activity does not provide an adequate written description of the genus. The court indicated that while Applicants are not required to disclose every species encompassed by a genus, the description of a genus is achieved by the recitation of a representative number of DNA molecules, usually defined by a nucleotide sequence, falling within the scope of the claimed genus. At section B(1), the court states that "An adequate written description of a DNA...'requires a precise definition, such as by structure, formula, chemical name, or physical properties', not a mere wish or plan for obtaining the claimed chemical invention".

At the time the application was filed Applicants only had possession of SEQ ID NO: 656 and 657 and not nucleotides and polypeptides that share less than 100% sequence identity with SEQ ID NO:2. The specification does not evidence the possession of all the possible mutant polypeptides that could be capable exhibiting the alleged wild type 125P5C8 properties listed on pages 10-13, such as a diagnostic marker. There is insufficient to support the generic claims as provided by the Interim Written Description Guidelines published in the June 15, 1998 Federal Register at Volume 63, Number 114, pages 32639-32645.

The full breadth of the claims do not meet the written description provision of 35 U.S.C. 112, first paragraph.

7. Claims 19, 21-24 and 67 are rejected under 35 U.S.C. 112, first paragraph, because the specification, does not reasonably provide enablement commensurate with the scope of the claimed invention. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

Claims 19, 21-24 and 67 are broadly drawn to methods of generating and inducing an immune response to a 158P1D7 protein and a exposing step that comprises administering a nucleotide sequence that encodes a portion of the said protein. The specification asserts that SEQ ID NO: 656 and SEQ ID NO: 657 are the novel nucleic acid and amino acid sequences, respectively for 158P1D17. However, the specification has also defined 125P5C8-related proteins, as well as 158P1D7 as

allelic variants, conservative substitution variants, analogs, homologs and fusion proteins that combine parts of different 158P1D7 proteins or fragments thereof, see page 14. The specification asserts that 158P1D7 nucleic acids and polypeptides serve as a useful diagnostic agent and/or therapeutic target for cancers of the tissues listed in five distinct organ systems, see page 6 and Table 1. The specification does not reasonably provide enablement for 158P1D7 or 158P1D7-related proteins. The specification provides prophetic assertions of the use of 158P1D7 molecules, however it is not clear that the said molecules which encompass allelic variants, conservative substitution variants, analogs, homologs, fusion proteins and related proteins are capable of acting in the manner suggested by the specification. The specification does not provide for a method of making 158P1D7 proteins based on fragment polynucleotides and non-coding polynucleotides. The specification suggests that 158P1D7 is SEQ ID NO: 656 (cDNA) and SEQ ID NO: 657 (protein), see page 6. However, the specification also lists 158P1D7 as mutant molecules, see page 14. Nucleic acid and amino acid sequences less than 100% of the nucleic acid and amino acid identified as SEQ ID NO: 656 and SEQ ID NO: 657, respectively may not maintain the activities proposed in the specification. It would seem that specific function(s) would be required to make the encoded protein useful for the applications disclosed in the specification, such as for treating disorders related to prostate, bladder, kidney, breast, lung and colon cancer providing immunogenic or therapeutic compositions and strategies for treating cancers that express 158P1D7, see Table 1 on page 116. . Since the amino acid sequence of a polypeptide determines its structural and functional

properties, predictability of which changes can be tolerated in a polypeptide=s amino acid sequence and still retain similar activity requires a knowledge of and guidance with regard to which amino acid or acids in the polypeptide=s sequence, if any, are tolerant of modification and which are conserved and detailed knowledge of the ways in which the protein=s structure relates to its function. The specification provides essentially no guidance as to which of the infinite possible choices is likely to be successful. The true fact of the state of the art in peptide chemistry is expressed succinctly in the accompanying Lazar article (Molecular and Cellular Biology 8(3): 1247-1252, March 1988). This article presents data that substantiates the fact that the introduction of mutations in an amino acid sequence will yield products with different biological activity from the wild type protein.

From the discussion above, it is clear that the predictability of changes to the amino acid sequence is practically nil as far as biological activities are concerned. The specification fails to provide sufficient guidance to enable one of ordinary skill in the art to make and use the claimed nucleic acids in a manner reasonably correlated with the broad scope of the claims. Without sufficient guidance, the changes which must be made in the nucleic acid sequence, SEQ ID NO: 656 and amino acid residues of SEQ ID NO: 657, which results in less than 100% sequence identity is unpredictable and the experimentation left to those skilled in the art is unnecessarily and improperly extensive and undue.

Based on the analysis and the teachings presented above it would require undue experimentation for the skilled artisan to practice this invention because there is no

support in the specification for the enablement of the broadly claimed invention. Therefore, in view of the insufficient guidance in the specification, extensive experimentation would be required to enable the claims and to practice the invention as claimed.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 19, 21-24 and 67 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The recitations "158P1D7" and "158P1D7-related proteins" in claims 19, 21 and 22 are vague and indefinite. It is not clear what qualities, activities or functions deem a protein as being related to wild-type 158P1D7 proteins. Furthermore, the recitation "158P1D7" appears to be a laboratory designation and the sole means of identifying the molecule. The use of laboratory designations only to identify a particular molecule renders the claims indefinite because various laboratories may use different laboratory designation to define the same product. Applicants may obviate this rejection my including a sequence identifying number.

Moreover, it is not clear if "158P1D7" represents wild-type molecules or variants. Accordingly, the metes and bounds of the term cannot be determined.

b. Claims 19 and 67 are vague and indefinite in the recitation "at least a portion of an 158P1D7-related protein" and "portion", respectively. It is not clear which

amino acid residues constitute the portion and the T cell epitope or a B cell epitope and capable of inducing an immune response. The metes and bounds of the claims cannot be determined.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

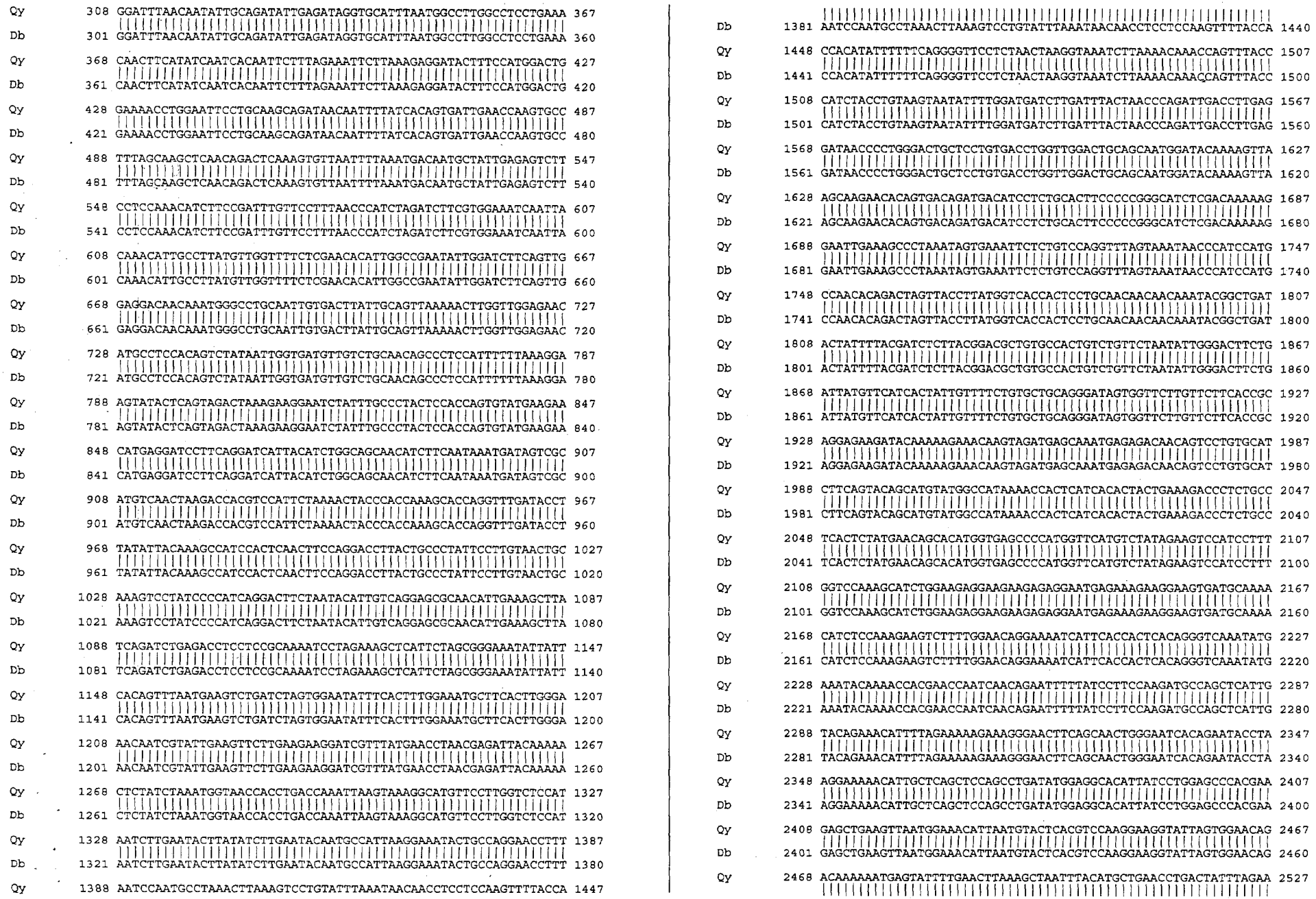
> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 19, 21-24 and 67 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent Application Publication number 2004/0033504 (effective filing April 27, 2000). United States Patent Application Publication #2004/0033504 discloses sequences 10 and 49, a polynucleotide and polypeptide sequence, respectively, which share at least 98% sequence identity to Applicants' SEQ ID NO: 656 and 657, see attached database sheets; page 10, Table 1; pages 26-28 and 62-64. SEQ ID NO: 656 and 657 are a polynucleotide and polypeptide sequences, respectively identified by Applicants as 158P1D7. The disclosed polynucleotides and polypeptides can be used in vaccines and in "method[s] for inducing an immunological response in a mammal that comprises inoculating the mammal with a polypeptide...adequate to produce antibody and/or T cell immune response, including for example, cytokine-cell producing T cells or cytotoxic T cells [CTL]...", see page 6,

sections 0066, 0067 and 0070; bridging paragraph of columns 1 and 2 on page 6. Inherently, the CTL have the ability to kill an autologous cell that expresses the disclosed 158P1D7 protein.

12. Claims 19, 21-24 and 67 are rejected under 35 U.S.C. 102(e) as being anticipated by WO 01/81363 (effective filing April 27, 2000). WO document 01/81363 discloses sequences 10 and 49, a polynucleotide and polypeptide sequence, respectively, which share at least 98% sequence identity to Applicants' SEQ ID NO: 656 and 657, see attached database sheets; Sequence listing, pages 6, 7, 33 and 34 of 69. SEQ ID NO: 656 and 657 are a polynucleotide and polypeptide sequences, respectively identified by Applicants as 158P1D7. The disclosed polynucleotides and polypeptides can be used in vaccines and in "method[s] for inducing an immunological response in a mammal that comprises inoculating the mammal with a polypeptide...adequate to produce antibody and/or T cell immune response, including for example, cytokine-cell producing T cells or cytotoxic T cells [CTL]...", see page 13, lines 17-25' bridging paragraph of pages 13 and 14. Inherently, the CTL have the ability to kill an autologous cell that expresses the disclosed 158P1D7 protein.

```
Db       2461 ACAAAAAATGAGTATTTTGAACTTAAAGCTAATTTACATGCTGAACCTGACTATTTAGAA 2520

Qy       2528 GTCCTGGAGCAGCAAACATAGATGGAGA 2555
              ||||||||||||||||||||||||||||
Db       2521 GTCCTGGAGCAGCAAACATAGATGGAGA 2548


RESULT 8
US-10-258-951-10
; Sequence 10, Application US/10258951
; Publication No. US20040033504A1
; GENERAL INFORMATION:
;  APPLICANT: Agarwal, Pankaj
;  APPLICANT:  Murdock, Paul R.
;  APPLICANT:  Rizvi, Safia K.
;  APPLICANT:  Smith, Randall F.
;  APPLICANT:  Xiang, Zhaoying
;  APPLICANT:  Kabnick, Karen
;  APPLICANT:  Lai, Ying-Ta
;  APPLICANT:  Xie, Qing
;  TITLE OF INVENTION: NOVEL COMPOUNDS
;  FILE REFERENCE: GP50025
;  CURRENT APPLICATION NUMBER: US/10/258,951
;  CURRENT FILING DATE:  2002-10-28
;  PRIOR APPLICATION NUMBER: PCT/US01/13360
;  PRIOR FILING DATE: 2001-04-26
;  PRIOR APPLICATION NUMBER: 60/199,963
;  PRIOR FILING DATE: 2000-04-27
;  PRIOR APPLICATION NUMBER: 60/203,336
;  PRIOR FILING DATE: 2000-05-11
;  PRIOR APPLICATION NUMBER: 60/207,087
;  PRIOR FILING DATE: 2000-05-25
;  PRIOR APPLICATION NUMBER: 60/207,546
;  PRIOR FILING DATE: 2000-05-26
;  NUMBER OF SEQ ID NOS: 78
;  SOFTWARE: FastSEQ for Windows Version 3.0
; SEQ ID NO 10
;   LENGTH: 2526
;   TYPE: DNA
;   ORGANISM: Homo sapiens
US-10-258-951-10

  Query Match             98.9%;  Score 2526;  DB 12;  Length 2526;
  Best Local Similarity   100.0%;  Pred. No. 0;
  Matches 2526;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy         23 ATGAAGCTGTGGATTCATCTCTTTTATTCATCTCTCCTTGCCTGTATATCTTTACACTCC 82
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 ATGAAGCTGTGGATTCATCTCTTTTATTCATCTCTCCTTGCCTGTATATCTTTACACTCC 60

Qy         83 CAAACTCCAGTGCTCTCATCCAGAGGCTCTTGTGATTCTCTTTGCAATTGTGAGGAAAAA 142
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 CAAACTCCAGTGCTCTCATCCAGAGGCTCTTGTGATTCTCTTTGCAATTGTGAGGAAAAA 120

Qy        143 GATGGCACAATGCTAATAAATTGTGAAGCAAAAGGTATCAAGATGGTATCTGAAATAAGT 202
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 GATGGCACAATGCTAATAAATTGTGAAGCAAAAGGTATCAAGATGGTATCTGAAATAAGT 180

Qy        203 GTGCCACCATCACGACCTTTCCAACTAAGCTTATTAAATAACGGCTTGACGATGCTTCAC 262
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        181 GTGCCACCATCACGACCTTTCCAACTAAGCTTATTAAATAACGGCTTGACGATGCTTCAC 240

Qy        263 ACAAATGACTTTTCTGGGCTTACCAATGCTATTTCAATACACCTTGGATTTAACAATATT 322
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        241 ACAAATGACTTTTCTGGGCTTACCAATGCTATTTCAATACACCTTGGATTTAACAATATT 300

Qy        323 GCAGATATTGAGATAGGTGCATTTAATGGCCTTGGCCTCCTGAAACAACTTCATATCAAT 382
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        301 GCAGATATTGAGATAGGTGCATTTAATGGCCTTGGCCTCCTGAAACAACTTCATATCAAT 360

Qy        383 CACAATTCTTTAGAAATTCTTAAAGAGGATACTTTCCATGGACTGGAAAACCTGGAATTC 442
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        361 CACAATTCTTTAGAAATTCTTAAAGAGGATACTTTCCATGGACTGGAAAACCTGGAATTC 420

Qy        443 CTGCAAGCAGATAACAATTTTATCACAGTGATTGAACCAAGTGCCTTTAGCAAGCTCAAC 502
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        421 CTGCAAGCAGATAACAATTTTATCACAGTGATTGAACCAAGTGCCTTTAGCAAGCTCAAC 480

Qy        503 AGACTCAAAGTGTTAATTTTAAATGACAATGCTATTGAGAGTCTTCCTCCAAACATCTTC 562
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        481 AGACTCAAAGTGTTAATTTTAAATGACAATGCTATTGAGAGTCTTCCTCCAAACATCTTC 540

Qy        563 CGATTTGTTCCTTTAACCCATCTAGATCTTCGTGGAAATCAATTACAAACATTGCCTTAT 622
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        541 CGATTTGTTCCTTTAACCCATCTAGATCTTCGTGGAAATCAATTACAAACATTGCCTTAT 600

Qy        623 GTTGGTTTTCTCGAACACATTGGCCGAATATTGGATCTTCAGTTGGAGGACAACAAATGG 682
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        601 GTTGGTTTTCTCGAACACATTGGCCGAATATTGGATCTTCAGTTGGAGGACAACAAATGG 660

Qy        683 GCCTGCAATTGTGACTTATTGCAGTTAAAAACTTGGTTGGAGAACATGCCTCCACAGTCT 742
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        661 GCCTGCAATTGTGACTTATTGCAGTTAAAAACTTGGTTGGAGAACATGCCTCCACAGTCT 720

Qy        743 ATAATTGGTGATGTTGTCTGCAACAGCCCTCCATTTTTTAAAGGAAGTATACTCAGTAGA 802
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        721 ATAATTGGTGATGTTGTCTGCAACAGCCCTCCATTTTTTAAAGGAAGTATACTCAGTAGA 780

Qy        803 CTAAAGAAGGAATCTATTTGCCCTACTCCACCAGTGTATGAAGAACATGAGGATCCTTCA 862
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        781 CTAAAGAAGGAATCTATTTGCCCTACTCCACCAGTGTATGAAGAACATGAGGATCCTTCA 840

Qy        863 GGATCATTACATCTGGCAGCAACATCTTCAATAAATGATAGTCGCATGTCAACTAAGACC 922
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        841 GGATCATTACATCTGGCAGCAACATCTTCAATAAATGATAGTCGCATGTCAACTAAGACC 900

Qy        923 ACGTCCATTCTAAAACTACCCACCAAAGCACCAGGTTTGATACCTTATATTACAAAGCCA 982
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        901 ACGTCCATTCTAAAACTACCCACCAAAGCACCAGGTTTGATACCTTATATTACAAAGCCA 960

Qy        983 TCCACTCAACTTCCAGGACCTTACTGCCCTATTCCTTGTAACTGCAAAGTCCTATCCCCA 1042
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        961 TCCACTCAACTTCCAGGACCTTACTGCCCTATTCCTTGTAACTGCAAAGTCCTATCCCCA 1020

Qy       1043 TCAGGACTTCTAATACATTGTCAGGAGCGCAACATTGAAAGCTTATCAGATCTGAGACCT 1102
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1021 TCAGGACTTCTAATACATTGTCAGGAGCGCAACATTGAAAGCTTATCAGATCTGAGACCT 1080

Qy       1103 CCTCCGCAAAATCCTAGAAAGCTCATTCTAGCGGGAAATATTATTCACAGTTTAATGAAG 1162
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1081 CCTCCGCAAAATCCTAGAAAGCTCATTCTAGCGGGAAATATTATTCACAGTTTAATGAAG 1140

Qy       1163 TCTGATCTAGTGGAATATTTCACTTTGGAAATGCTTCACTTGGGAAACAATCGTATTGAA 1222
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1141 TCTGATCTAGTGGAATATTTCACTTTGGAAATGCTTCACTTGGGAAACAATCGTATTGAA 1200

Qy       1223 GTTCTTGAAGAAGGATCGTTTATGAACCTAACGAGATTACAAAAACTCTATCTAAATGGT 1282
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1201 GTTCTTGAAGAAGGATCGTTTATGAACCTAACGAGATTACAAAAACTCTATCTAAATGGT 1260

Qy       1283 AACCACCTGACCAAATTAAGTAAAGGCATGTTCCTTGGTCTCCATAATCTTGAATACTTA 1342
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1261 AACCACCTGACCAAATTAAGTAAAGGCATGTTCCTTGGTCTCCATAATCTTGAATACTTA 1320

Qy       1343 TATCTTGAATACAATGCCATTAAGGAAATACTGCCAGGAACCTTTAATCCAATGCCTAAA 1402
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1321 TATCTTGAATACAATGCCATTAAGGAAATACTGCCAGGAACCTTTAATCCAATGCCTAAA 1380

Qy       1403 CTTAAAGTCCTGTATTTAAATAACAACCTCCTCCAAGTTTTACCACCACATATTTTTTCA 1462
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1381 CTTAAAGTCCTGTATTTAAATAACAACCTCCTCCAAGTTTTACCACCACATATTTTTTCA 1440

Qy       1463 GGGGTTCCTCTAACTAAGGTAAATCTTAAAACAAACCAGTTTACCCATCTACCTGTAAGT 1522
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1441 GGGGTTCCTCTAACTAAGGTAAATCTTAAAACAAACCAGTTTACCCATCTACCTGTAAGT 1500
```


Qy 308 GGATTTAACAATATTGCAGATATTGAGATAGGTGCATTTAATGGCCTTGGCCTCCTGAAA 367
Db 301 GGATTTAACAATATTGCAGATATTGAGATAGGTGCATTTAATGGCCTTGGCCTCCTGAAA 360
Qy 368 CAACTTCATATCAATCACAATTCTTTAGAAATTCTTAAAGAGGATACTTTCCATGGACTG 427
Db 361 CAACTTCATATCAATCACAATTCTTTAGAAATTCTTAAAGAGGATACTTTCCATGGACTG 420
Qy 428 GAAAACCTGGAATTCCTGCAAGCAGATAACAATTTTATCACAGTGATTGAACCAAGTGCC 487
Db 421 GAAAACCTGGAATTCCTGCAAGCAGATAACAATTTTATCACAGTGATTGAACCAAGTGCC 480
Qy 488 TTTAGCAAGCTCAACAGACTCAAAGTGTTAATTTTAAATGACAATGCTATTGAGAGTCTT 547
Db 481 TTTAGCAAGCTCAACAGACTCAAAGTGTTAATTTTAAATGACAATGCTATTGAGAGTCTT 540
Qy 548 CCTCCAAACATCTTCCGATTTGTTCCTTTAACCCATCTAGATCTTCGTGGAAATCAATTA 607
Db 541 CCTCCAAACATCTTCCGATTTGTTCCTTTAACCCATCTAGATCTTCGTGGAAATCAATTA 600
Qy 608 CAAACATTGCCTTATGTTGGTTTTCTCGAACACATTGGCCGAATATTGGATCTTCAGTTG 667
Db 601 CAAACATTGCCTTATGTTGGTTTTCTCGAACACATTGGCCGAATATTGGATCTTCAGTTG 660
Qy 668 GAGGACAACAAATGGGCCTGCAATTGTGACTTATTGCAGTTAAAAACTTGGTTGGAGAAC 727
Db 661 GAGGACAACAAATGGGCCTGCAATTGTGACTTATTGCAGTTAAAAACTTGGTTGGAGAAC 720
Qy 728 ATGCCTCCACAGTCTATAATTGGTGATGTTGTCTGCAACAGCCCTCCATTTTTTAAAGGA 787
Db 721 ATGCCTCCACAGTCTATAATTGGTGATGTTGTCTGCAACAGCCCTCCATTTTTTAAAGGA 780
Qy 788 AGTATACTCAGTAGACTAAAGAAGGAATCTATTTGCCCTACTCCACCAGTGTATGAAGAA 847
Db 781 AGTATACTCAGTAGACTAAAGAAGGAATCTATTTGCCCTACTCCACCAGTGTATGAAGAA 840
Qy 848 CATGAGGATCCTTCAGGATCATTACATCTGGCAGCAACATCTTCAATAAATGATAGTCGC 907
Db 841 CATGAGGATCCTTCAGGATCATTACATCTGGCAGCAACATCTTCAATAAATGATAGTCGC 900
Qy 908 ATGTCAACTAAGACCACGTCCATTCTAAAACTACCCACCAAAGCACCAGGTTTGATACCT 967
Db 901 ATGTCAACTAAGACCACGTCCATTCTAAAACTACCCACCAAAGCACCAGGTTTGATACCT 960
Qy 968 TATATTACAAAGCCATCCACTCAACTTCCAGGACCTTACTGCCCTATTCCTTGTAACTGC 1027
Db 961 TATATTACAAAGCCATCCACTCAACTTCCAGGACCTTACTGCCCTATTCCTTGTAACTGC 1020
Qy 1028 AAAGTCCTATCCCCATCAGGACTTCTAATACATTGTCAGGAGCGCAACATTGAAAGCTTA 1087
Db 1021 AAAGTCCTATCCCCATCAGGACTTCTAATACATTGTCAGGAGCGCAACATTGAAAGCTTA 1080
Qy 1088 TCAGATCTGAGACCTCCTCCGCAAAATCCTAGAAAGCTCATTCTAGCGGGAAATATTATT 1147
Db 1081 TCAGATCTGAGACCTCCTCCGCAAAATCCTAGAAAGCTCATTCTAGCGGGAAATATTATT 1140
Qy 1148 CACAGTTTAATGAAGTCTGATCTAGTGGAATATTTCACTTTGGAAATGCTTCACTTGGGA 1207
Db 1141 CACAGTTTAATGAAGTCTGATCTAGTGGAATATTTCACTTTGGAAATGCTTCACTTGGGA 1200
Qy 1208 AACAATCGTATTGAAGTTCTTGAAGAAGGATCGTTTATGAACCTAACGAGATTACAAAAA 1267
Db 1201 AACAATCGTATTGAAGTTCTTGAAGAAGGATCGTTTATGAACCTAACGAGATTACAAAAA 1260
Qy 1268 CTCTATCTAAATGGTAACCACCTGACCAAATTAAGTAAAGGCATGTTCCTTGGTCTCCAT 1327
Db 1261 CTCTATCTAAATGGTAACCACCTGACCAAATTAAGTAAAGGCATGTTCCTTGGTCTCCAT 1320
Qy 1328 AATCTTGAATACTTATATCTTGAATACAATGCCATTAAGGAAATACTGCCAGGAACCTTT 1387
Db 1321 AATCTTGAATACTTATATCTTGAATACAATGCCATTAAGGAAATACTGCCAGGAACCTTT 1380
Qy 1388 AATCCAATGCCTAAACTTAAAGTCCTGTATTTAAATAACAACCTCCTCCAAGTTTTACCA 1447
Db 1381 AATCCAATGCCTAAACTTAAAGTCCTGTATTTAAATAACAACCTCCTCCAAGTTTTACCA 1440
Qy 1448 CCACATATTTTTTCAGGGGTTCCTCTAACTAAGGTAAATCTTAAAACAAACCAGTTTACC 1507
Db 1441 CCACATATTTTTTCAGGGGTTCCTCTAACTAAGGTAAATCTTAAAACAAACCAGTTTACC 1500
Qy 1508 CATCTACCTGTAAGTAATATTTTGGATGATCTTGATTTACTAACCCAGATTGACCTTGAG 1567
Db 1501 CATCTACCTGTAAGTAATATTTTGGATGATCTTGATTTACTAACCCAGATTGACCTTGAG 1560
Qy 1568 GATAACCCCTGGGACTGCTCCTGTGACCTGGTTGGACTGCAGCAATGGATACAAAAGTTA 1627
Db 1561 GATAACCCCTGGGACTGCTCCTGTGACCTGGTTGGACTGCAGCAATGGATACAAAAGTTA 1620
Qy 1628 AGCAAGAACACAGTGACAGATGACATCCTCTGCACTTCCCCCGGGCATCTCGACAAAAAG 1687
Db 1621 AGCAAGAACACAGTGACAGATGACATCCTCTGCACTTCCCCCGGGCATCTCGACAAAAAG 1680
Qy 1688 GAATTGAAAGCCCTAAATAGTGAAATTCTCTGTCCAGGTTTAGTAAATAACCCATCCATG 1747
Db 1681 GAATTGAAAGCCCTAAATAGTGAAATTCTCTGTCCAGGTTTAGTAAATAACCCATCCATG 1740
Qy 1748 CCAACACAGACTAGTTACCTTATGGTCACCACTCCTGCAACAACAACAAATACGGCTGAT 1807
Db 1741 CCAACACAGACTAGTTACCTTATGGTCACCACTCCTGCAACAACAACAAATACGGCTGAT 1800
Qy 1808 ACTATTTTACGATCTCTTACGGACGCTGTGCCACTGTCTGTTCTAATATTGGGACTTCTG 1867
Db 1801 ACTATTTTACGATCTCTTACGGACGCTGTGCCACTGTCTGTTCTAATATTGGGACTTCTG 1860
Qy 1868 ATTATGTTCATCACTATTGTTTTCTGTGCTGCAGGGATAGTGGTTCTTGTTCTTCACCGC 1927
Db 1861 ATTATGTTCATCACTATTGTTTTCTGTGCTGCAGGGATAGTGGTTCTTGTTCTTCACCGC 1920
Qy 1928 AGGAGAAGATACAAAAAGAAACAAGTAGATGAGCAAATGAGAGACAACAGTCCTGTGCAT 1987
Db 1921 AGGAGAAGATACAAAAAGAAACAAGTAGATGAGCAAATGAGAGACAACAGTCCTGTGCAT 1980
Qy 1988 CTTCAGTACAGCATGTATGGCCATAAAACCACTCATCACACTACTGAAAGACCCTCTGCC 2047
Db 1981 CTTCAGTACAGCATGTATGGCCATAAAACCACTCATCACACTACTGAAAGACCCTCTGCC 2040
Qy 2048 TCACTCTATGAACAGCACATGGTGAGCCCCATGGTTCATGTCTATAGAAGTCCATCCTTT 2107
Db 2041 TCACTCTATGAACAGCACATGGTGAGCCCCATGGTTCATGTCTATAGAAGTCCATCCTTT 2100
Qy 2108 GGTCCAAAGCATCTGGAAGAGGAAGAAGAGAGGAATGAGAAAGAAGGAAGTGATGCAAAA 2167
Db 2101 GGTCCAAAGCATCTGGAAGAGGAAGAAGAGAGGAATGAGAAAGAAGGAAGTGATGCAAAA 2160
Qy 2168 CATCTCCAAAGAAGTCTTTTGGAACAGGAAAATCATTCACCACTCACAGGGTCAAATATG 2227
Db 2161 CATCTCCAAAGAAGTCTTTTGGAACAGGAAAATCATTCACCACTCACAGGGTCAAATATG 2220
Qy 2228 AAATACAAAACCACGAACCAATCAACAGAATTTTTATCCTTCCAAGATGCCAGCTCATTG 2287
Db 2221 AAATACAAAACCACGAACCAATCAACAGAATTTTTATCCTTCCAAGATGCCAGCTCATTG 2280
Qy 2288 TACAGAAACATTTTAGAAAAAGAAAGGGAACTTCAGCAACTGGGAATCACAGAATACCTA 2347
Db 2281 TACAGAAACATTTTAGAAAAAGAAAGGGAACTTCAGCAACTGGGAATCACAGAATACCTA 2340
Qy 2348 AGGAAAAACATTGCTCAGCTCCAGCCTGATATGGAGGCACATTATCCTGGAGCCCACGAA 2407
Db 2341 AGGAAAAACATTGCTCAGCTCCAGCCTGATATGGAGGCACATTATCCTGGAGCCCACGAA 2400
Qy 2408 GAGCTGAAGTTAATGGAAACATTAATGTACTCACGTCCAAGGAAGGTATTAGTGGAACAG 2467
Db 2401 GAGCTGAAGTTAATGGAAACATTAATGTACTCACGTCCAAGGAAGGTATTAGTGGAACAG 2460
Qy 2468 ACAAAAAATGAGTATTTTGAACTTAAAGCTAATTTACATGCTGAACCTGACTATTTAGAA 2527

```
Db       2461 ACAAAAAATGAGTATTTTGAACTTAAAGCTAATTTACATGCTGAACCTGACTATTTAGAA 2520

Qy       2528 GTCCTGGAGCAGCAAACATAGATGGAGA 2555
              ||||||||||||||||||||||||||||
Db       2521 GTCCTGGAGCAGCAAACATAGATGGAGA 2548
```

ABA90335
ID ABA90335 standard; cDNA; 2526 BP.
XX
AC ABA90335;
XX
DT 12-FEB-2002 (first entry)
XX
DE Human polynucleotide #10.
XX
KW Human; nootropic; neuroprotective; anticonvulsant; antidepressant;
KW neuroleptic; tranquiliser; antiarrhythmic; cardiant; antiasthmatic;
KW antiinflammatory; antilipaemic; hepatotropic; virucide; antidiabetic;
KW nephrotropic; anorectic; cytostatic; vaccine; neurological disease;
KW cardiovascular disease; respiratory disease; liver disease;
KW renal disease; skeletal muscle disease; gastrointestinal disease;
KW placental disease; testicular cancer; male fertility; pancreatic disease;
KW ss.
XX
OS Homo sapiens.
XX
PN WO200181363-A1.
XX
PD 01-NOV-2001.
XX
PF 26-APR-2001; 2001WO-US013360.
XX
PR 27-APR-2000; 2000US-0199963P.
PR 11-MAY-2000; 2000US-0203336P.
PR 25-MAY-2000; 2000US-0207087P.
PR 26-MAY-2000; 2000US-0207546P.
XX
PA (SMIK) SMITHKLINE BEECHAM CORP.
PA (SMIK) SMITHKLINE BEECHAM PLC.
XX
PI Agarwal P, Murdock PR, Rizvi SK, Smith RF, Xiang Z, Kabnick KS;
PI Lai Y, Xie Q;
XX
DR WPI; 2002-041392/05.
DR P-PSDB; ABB53270.
XX
PT Novel polypeptides and polynucleotides useful as a vaccine for preventing
PT and treating diseases associated the polypeptide, e.g. Alzheimer's
PT disease, dyslipidemia, obesity, diabetes, infertility, asthma, amnesias.
XX
PS Claim 2; Page 50; 116pp; English.
XX
CC The invention relates to an isolated polypeptide comprising a 277, 480,
CC 583, 581, 628, 424, 638, 229, 310, 841, 241, 369, 382, 185, 586, 1026,
CC 844, 782, 262, 394, 471, 485, 286, 533, 495, 350, 619, 490, 462, 255,
CC 784, 252, 593, 472, 607, 781, 640, 686 or 154 amino acid sequence as
CC given in the specification. The polypeptides, modulators of the
CC polypeptides and antibodies against the polypeptides are useful for
CC treating diseases such as neurological and psychiatric diseases including
CC Alzheimer's, parasupranuclear palsy, Huntington's disease, myotonic
CC dystrophy, anorexia and depression; cardiovascular diseases including
CC congestive heart failure, Hodgkin's disease and myocardial infarction;
CC respiratory diseases including asthma, chronic obstructive pulmonary
CC disease, cystic fibrosis and adult respiratory distress syndrome; liver
CC diseases including hypercholesterolaemia, cirrhosis, viral and nonviral
CC hepatitis, Type II diabetes mellitis, and impaired glucose tolerance;
CC renal disease including renal failure, acute tubular necrosis and
CC glomerulonephritis; skeletal muscle diseases including Eulenburg's
CC disease, hypoglycaemia and obesity; gastrointestinal diseases including
CC myotonia congenita and intestinal obstruction; lymph diseases including
CC lymphagiectasia; diseases of placenta including choriocarcinoma; diseases
CC of testes including testicular cancer, male reproductive diseases
CC including low testosterone and male infertility; and disease of pancreas
CC including diabetic ketoacidosis, Type 1 and 2 diabetes and obesity. The
CC present sequence encodes a polypeptide of the invention
XX
SQ Sequence 2526 BP; 823 A; 555 C; 448 G; 700 T; 0 U; 0 Other;

  Query Match 98.9%; Score 2526; DB 6; Length 2526;

Best Local Similarity 100.0%; Pred. No. 0;
Matches 2526; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy      23 ATGAAGCTGTGGATTCATCTCTTTTATTCATCTCTCCTTGCCTGTATATCTTTACACTCC  82
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1 ATGAAGCTGTGGATTCATCTCTTTTATTCATCTCTCCTTGCCTGTATATCTTTACACTCC  60

Qy      83 CAAACTCCAGTGCTCTCATCCAGAGGCTCTTGTGATTCTCTTTGCAATTGTGAGGAAAAA 142
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      61 CAAACTCCAGTGCTCTCATCCAGAGGCTCTTGTGATTCTCTTTGCAATTGTGAGGAAAAA 120

Qy     143 GATGGCACAATGCTAATAAATTGTGAAGCAAAAGGTATCAAGATGGTATCTGAAATAAGT 202
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     121 GATGGCACAATGCTAATAAATTGTGAAGCAAAAGGTATCAAGATGGTATCTGAAATAAGT 180

Qy     203 GTGCCACCATCACGACCTTTCCAACTAAGCTTATTAAATAACGGCTTGACGATGCTTCAC 262
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     181 GTGCCACCATCACGACCTTTCCAACTAAGCTTATTAAATAACGGCTTGACGATGCTTCAC 240

Qy     263 ACAAATGACTTTTCTGGGCTTACCAATGCTATTTCAATACACCTTGGATTTAACAATATT 322
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     241 ACAAATGACTTTTCTGGGCTTACCAATGCTATTTCAATACACCTTGGATTTAACAATATT 300

Qy     323 GCAGATATTGAGATAGGTGCATTTAATGGCCTTGGCCTCCTGAAACAACTTCATATCAAT 382
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     301 GCAGATATTGAGATAGGTGCATTTAATGGCCTTGGCCTCCTGAAACAACTTCATATCAAT 360

Qy     383 CACAATTCTTTAGAAATTCTTAAAGAGGATACTTTCCATGGACTGGAAAACCTGGAATTC 442
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     361 CACAATTCTTTAGAAATTCTTAAAGAGGATACTTTCCATGGACTGGAAAACCTGGAATTC 420

Qy     443 CTGCAAGCAGATAACAATTTTATCACAGTGATTGAACCAAGTGCCTTTAGCAAGCTCAAC 502
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     421 CTGCAAGCAGATAACAATTTTATCACAGTGATTGAACCAAGTGCCTTTAGCAAGCTCAAC 480

Qy     503 AGACTCAAAGTGTTAATTTTAAATGACAATGCTATTGAGAGTCTTCCTCCAAACATCTTC 562
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     481 AGACTCAAAGTGTTAATTTTAAATGACAATGCTATTGAGAGTCTTCCTCCAAACATCTTC 540

Qy     563 CGATTTGTTCCTTTAACCCATCTAGATCTTCGTGGAAATCAATTACAAACATTGCCTTAT 622
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     541 CGATTTGTTCCTTTAACCCATCTAGATCTTCGTGGAAATCAATTACAAACATTGCCTTAT 600

Qy     623 GTTGGTTTTCTCGAACACATTGGCCGAATATTGGATCTTCAGTTGGAGGACAACAAATGG 682
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     601 GTTGGTTTTCTCGAACACATTGGCCGAATATTGGATCTTCAGTTGGAGGACAACAAATGG 660

Qy     683 GCCTGCAATTGTGACTTATTGCAGTTAAAAACTTGGTTGGAGAACATGCCTCCACAGTCT 742
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     661 GCCTGCAATTGTGACTTATTGCAGTTAAAAACTTGGTTGGAGAACATGCCTCCACAGTCT 720

Qy     743 ATAATTGGTGATGTTGTCTGCAACAGCCCTCCATTTTTTAAAGGAAGTATACTCAGTAGA 802
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     721 ATAATTGGTGATGTTGTCTGCAACAGCCCTCCATTTTTTAAAGGAAGTATACTCAGTAGA 780

Qy     803 CTAAAGAAGGAATCTATTTGCCCTACTCCACCAGTGTATGAAGAACATGAGGATCCTTCA 862
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     781 CTAAAGAAGGAATCTATTTGCCCTACTCCACCAGTGTATGAAGAACATGAGGATCCTTCA 840

Qy     863 GGATCATTACATCTGGCAGCAACATCTTCAATAAATGATAGTCGCATGTCAACTAAGACC 922
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     841 GGATCATTACATCTGGCAGCAACATCTTCAATAAATGATAGTCGCATGTCAACTAAGACC 900

Qy     923 ACGTCCATTCTAAAACTACCCACCAAAGCACCAGGTTTGATACCTTATATTACAAAGCCA 982
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     901 ACGTCCATTCTAAAACTACCCACCAAAGCACCAGGTTTGATACCTTATATTACAAAGCCA 960

Qy     983 TCCACTCAACTTCCAGGACCTTACTGCCCTATTCCTTGTAACTGCAAAGTCCTATCCCCA 1042
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db     961 TCCACTCAACTTCCAGGACCTTACTGCCCTATTCCTTGTAACTGCAAAGTCCTATCCCCA 1020

Qy    1043 TCAGGACTTCTAATACATTGTCAGGAGCGCAACATTGAAAGCTTATCAGATCTGAGACCT 1102
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1021 TCAGGACTTCTAATACATTGTCAGGAGCGCAACATTGAAAGCTTATCAGATCTGAGACCT 1080

Qy    1103 CCTCCGCAAAATCCTAGAAAGCTCATTCTAGCGGGAAATATTATTCACAGTTTAATGAAG 1162
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1081 CCTCCGCAAAATCCTAGAAAGCTCATTCTAGCGGGAAATATTATTCACAGTTTAATGAAG 1140

Qy    1163 TCTGATCTAGTGGAATATTTCACTTTGGAAATGCTTCACTTGGGAAACAATCGTATTGAA 1222
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1141 TCTGATCTAGTGGAATATTTCACTTTGGAAATGCTTCACTTGGGAAACAATCGTATTGAA 1200

Qy    1223 GTTCTTGAAGAAGGATCGTTTATGAACCTAACGAGATTACAAAAACTCTATCTAAATGGT 1282
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1201 GTTCTTGAAGAAGGATCGTTTATGAACCTAACGAGATTACAAAAACTCTATCTAAATGGT 1260

Qy    1283 AACCACCTGACCAAATTAAGTAAAGGCATGTTCCTTGGTCTCCATAATCTTGAATACTTA 1342
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1261 AACCACCTGACCAAATTAAGTAAAGGCATGTTCCTTGGTCTCCATAATCTTGAATACTTA 1320

Qy    1343 TATCTTGAATACAATGCCATTAAGGAAATACTGCCAGGAACCTTTAATCCAATGCCTAAA 1402
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1321 TATCTTGAATACAATGCCATTAAGGAAATACTGCCAGGAACCTTTAATCCAATGCCTAAA 1380

Qy    1403 CTTAAAGTCCTGTATTTAAATAACAACCTCCTCCAAGTTTTACCACCACATATTTTTTCA 1462
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1381 CTTAAAGTCCTGTATTTAAATAACAACCTCCTCCAAGTTTTACCACCACATATTTTTTCA 1440

Qy    1463 GGGGTTCCTCTAACTAAGGTAAATCTTAAAACAAACCAGTTTACCCATCTACCTGTAAGT 1522
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1441 GGGGTTCCTCTAACTAAGGTAAATCTTAAAACAAACCAGTTTACCCATCTACCTGTAAGT 1500

Qy    1523 AATATTTTGGATGATCTTGATTTACTAACCCAGATTGACCTTGAGGATAACCCCTGGGAC 1582
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1501 AATATTTTGGATGATCTTGATTTACTAACCCAGATTGACCTTGAGGATAACCCCTGGGAC 1560

Qy    1583 TGCTCCTGTGACCTGGTTGGACTGCAGCAATGGATACAAAAGTTAAGCAAGAACACAGTG 1642
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1561 TGCTCCTGTGACCTGGTTGGACTGCAGCAATGGATACAAAAGTTAAGCAAGAACACAGTG 1620

Qy    1643 ACAGATGACATCCTCTGCACTTCCCCCGGGCATCTCGACAAAAAGGAATTGAAAGCCCTA 1702
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1621 ACAGATGACATCCTCTGCACTTCCCCCGGGCATCTCGACAAAAAGGAATTGAAAGCCCTA 1680

Qy    1703 AATAGTGAAATTCTCTGTCCAGGTTTAGTAAATAACCCATCCATGCCAACACAGACTAGT 1762
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1681 AATAGTGAAATTCTCTGTCCAGGTTTAGTAAATAACCCATCCATGCCAACACAGACTAGT 1740

Qy    1763 TACCTTATGGTCACCACTCCTGCAACAACAACAAATACGGCTGATACTATTTTACGATCT 1822
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1741 TACCTTATGGTCACCACTCCTGCAACAACAACAAATACGGCTGATACTATTTTACGATCT 1800

Qy    1823 CTTACGGACGCTGTGCCACTGTCTGTTCTAATATTGGGACTTCTGATTATGTTCATCACT 1882
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1801 CTTACGGACGCTGTGCCACTGTCTGTTCTAATATTGGGACTTCTGATTATGTTCATCACT 1860

Qy    1883 ATTGTTTTCTGTGCTGCAGGGATAGTGGTTCTTGTTCTTCACCGCAGGAGAAGATACAAA 1942
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1861 ATTGTTTTCTGTGCTGCAGGGATAGTGGTTCTTGTTCTTCACCGCAGGAGAAGATACAAA 1920

Qy    1943 AAGAAACAAGTAGATGAGCAAATGAGAGACAACAGTCCTGTGCATCTTCAGTACAGCATG 2002
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1921 AAGAAACAAGTAGATGAGCAAATGAGAGACAACAGTCCTGTGCATCTTCAGTACAGCATG 1980

Qy    2003 TATGGCCATAAAACCACTCATCACACTACTGAAAGACCCTCTGCCTCACTCTATGAACAG 2062
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    1981 TATGGCCATAAAACCACTCATCACACTACTGAAAGACCCTCTGCCTCACTCTATGAACAG 2040

Qy    2063 CACATGGTGAGCCCCATGGTTCATGTCTATAGAAGTCCATCCTTTGGTCCAAAGCATCTG 2122
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    2041 CACATGGTGAGCCCCATGGTTCATGTCTATAGAAGTCCATCCTTTGGTCCAAAGCATCTG 2100

Qy    2123 GAAGAGGAAGAAGAGAGGAATGAGAAAGAAGGAAGTGATGCAAAACATCTCCAAAGAAGT 2182
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    2101 GAAGAGGAAGAAGAGAGGAATGAGAAAGAAGGAAGTGATGCAAAACATCTCCAAAGAAGT 2160
```

```
Qy      2183 CTTTTGGAACAGGAAAATCATTCACCACTCACAGGGTCAAATATGAAATACAAAACCACG 2242
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      2161 CTTTTGGAACAGGAAAATCATTCACCACTCACAGGGTCAAATATGAAATACAAAACCACG 2220

Qy      2243 AACCAATCAACAGAATTTTTATCCTTCCAAGATGCCAGCTCATTGTACAGAAACATTTTA 2302
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      2221 AACCAATCAACAGAATTTTTATCCTTCCAAGATGCCAGCTCATTGTACAGAAACATTTTA 2280

Qy      2303 GAAAAAGAAAGGGAACTTCAGCAACTGGGAATCACAGAATACCTAAGGAAAAACATTGCT 2362
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      2281 GAAAAAGAAAGGGAACTTCAGCAACTGGGAATCACAGAATACCTAAGGAAAAACATTGCT 2340

Qy      2363 CAGCTCCAGCCTGATATGGAGGCACATTATCCTGGAGCCCACGAAGAGCTGAAGTTAATG 2422
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      2341 CAGCTCCAGCCTGATATGGAGGCACATTATCCTGGAGCCCACGAAGAGCTGAAGTTAATG 2400

Qy      2423 GAAACATTAATGTACTCACGTCCAAGGAAGGTATTAGTGGAACAGACAAAAAATGAGTAT 2482
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      2401 GAAACATTAATGTACTCACGTCCAAGGAAGGTATTAGTGGAACAGACAAAAAATGAGTAT 2460

Qy      2483 TTTGAACTTAAAGCTAATTTACATGCTGAACCTGACTATTTAGAAGTCCTGGAGCAGCAA 2542
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db      2461 TTTGAACTTAAAGCTAATTTACATGCTGAACCTGACTATTTAGAAGTCCTGGAGCAGCAA 2520

Qy      2543 ACATAG 2548
             ||||||
Db      2521 ACATAG 2526
```

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alana M. Harris, Ph.D. whose telephone number is (571)272-0831. The examiner works a flexible schedule and normally can be reached on 7:00 am to 4:30 pm, with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne "Bonnie" Eyler, Ph.D. can be reached on (571)272-0871. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ALANA M. HARRIS, PH.D.
PRIMARY EXAMINER

Alana M. Harris, Ph.D.
March 22, 2004